

WHAT IS CLAIMED IS:

1. A method for guaranteeing a delay jitter bound when scheduling transmission opportunities to constant bit rate data applications via a communication medium, including the steps of:

determining the delay jitter bound;

based on said determined delay jitter bound, dividing a packetization frame period into one or more phases;

assigning a constant bit rate data application to one of said phases;

and

scheduling a transmission opportunity to said constant bit rate data application during said assigned phase, thereby guaranteeing the delay jitter bound.

2. The method of claim 1, wherein said transmission opportunity is a bandwidth grant and said constant bit rate application is a voice call.

3. The method of claim 2, wherein said step of scheduling includes the steps of:

determining whether said voice call is active; and

granting bandwidth to said voice call only when said voice call is active.

4. The method of claim 3, wherein said step of scheduling further includes the step of granting bandwidth to non-voice data according to a fragmentation policy.

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5. The method of claim 4, wherein said fragmentation policy is a fixed region boundaries and strict fragmentation policy.

6. The method of claim 4, wherein said fragmentation policy is a floating region boundaries and minimized fragmentation policy.

7. The method of claim 4, wherein said fragmentation policy is a fixed region boundaries and best fit packet policy.

8. The method of claim 2, further including the step of:  
alternating the order of the grant of bandwidth to said voice call and non-voice data in adjacent phases of said one or more phases.

9. The method of claim 1, wherein the communication medium is a cable network.

10. The method of claim 1, wherein the communication medium is a wireless network.

11. The method of claim 1, wherein the communication medium is the Internet.

12. The method of claim 1, wherein the communication medium is a satellite network.

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13. The method of claim 1, wherein the communication medium is a fiber optic network.

14. The method of claim 1, wherein one or more of said phases is further divided into sub-phases.

15. The method of claim 2, further comprising the step of:  
delaying the transmission of said bandwidth grant to ensure a zero delay jitter bound.

16. A system for guaranteeing a delay jitter bound when scheduling transmission opportunities to constant bit rate data applications via a communication medium, comprising:

a scheduler, wherein said scheduler determines the delay jitter bound, wherein said scheduler divides a packetization frame period into one or more phases based on said determined delay jitter bound, wherein said scheduler assigns a constant bit rate data application to one of said phases, and wherein said scheduler schedules a transmission opportunity to said constant bit rate data application during said assigned phase, thereby guaranteeing the delay jitter bound.

17. The system of claim 16, wherein said transmission opportunity is a bandwidth grant and said constant bit rate application is a voice call

18. The system of claim 17, wherein said scheduler determines whether said voice call is active, and wherein said scheduler grants bandwidth to said voice call only when said voice call is active.

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19. The system of claim 18, wherein said scheduler grants bandwidth to non-voice data according to a fragmentation policy.

20. The system of claim 19, wherein said fragmentation policy is a fixed region boundaries and strict fragmentation policy.

21. The system of claim 19, wherein said fragmentation policy is a floating region boundaries and minimized fragmentation policy.

22. The system of claim 19, wherein said fragmentation policy is a fixed region boundaries and best fit packet policy.

23. The system of claim 17, wherein one or more of said phases is further divided into sub-phases.

24. The system of claim 16, wherein the communication medium is a cable network.

25. The system of claim 16, wherein the communication medium is a wireless network.

26. The system of claim 16, wherein the communication medium is the Internet.

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27. The system of claim 16, wherein the communication medium is a satellite network.

28. The system of claim 16, wherein the communication medium is a fiber optic network.

29. The system of claim 16, wherein said scheduler is implemented as a priority first-come first-served scheduler.

30. The system of claim 16, wherein said scheduler is applied in a switch implementation.

31. The system of claim 16, further comprising:  
a dejitter buffer for delaying the transmission of a packet to an external system to ensure a zero delay jitter bound.

32. The system of claim 31, wherein said external system is the Internet.

33. The system of claim 17, wherein said scheduler alternates the order of the grant of bandwidth to said voice call and non-voice data in adjacent phases of said one or more phases.

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